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IndoGuruji Indian Language Teacher

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Abstract: ***The IndoGuruji Indian Language Teacher application is a great application for anyone wanting to learn an Indian regional language. It provides an easy and convenient way to learn text from one language to another. The application is extremely user-friendly and can be used by anyone, regardless of their level of expertise. The Indian Language Teacher is an essential tool for anyone wanting to communicate in an Indian regional language. It is a revolutionary new application that makes learning Indian languages easy and fun. With its user-friendly interface and comprehensive language learning tools, the Indian Language Teacher is the perfect application for anyone interested in learning an Indian language. The IndoGuruji Application is the one and only kind to teach the Indian Language in an interactive way and also covers all the flaws of the other Indian Language Teaching application which is available in the market. The app contains lessons and quizzes to help users learn the basics of the Indian language of their choice.***

Keywords: Indian language teaching, Language learning application, Python, Flutter, SQLite3, Django, REST framework, Natural Language Processing (NLP), Artificial Intelligence (AI) in language learning, Machine learning algorithms, Speech recognition, Text-to-speech conversion, Interactive learning experience, Gamification in language learning, Adaptive learning, Communicative Language Teaching (CLT), Mobile-Assisted Language Learning (MALL), assessment, Indian languages, regional language learning, vocabulary instruction, grammar instruction.

I. INTRODUCTION

In our globalized world, language learning is becoming increasingly important. Learning a new language opens up new opportunities, whether it's for personal growth, professional advancement, or travel. However, learning a new language can be challenging, time-consuming, and costly. To address these challenges, we have developed the Indian Language Teacher application, a language learning platform that aims to help users learn Indian languages in an interactive, engaging, and personalized way.

The Indian Language Teacher application is a mobile app that offers an immersive language learning experience for users who want to learn Indian languages such as Marathi, Hindi, Tamil, Telugu, Kannada, and more. The application has been developed using Python in the backend, Flutter in the front end, and SQLite3 database. We have also used the Django Rest Framework to build a robust and scalable backend API. The user interface is designed to be user-friendly and intuitive, with interactive elements that engage and motivate the user to continue learning.

The Indian Language Teacher application offers a wide range of features and functionalities that are specifically designed to facilitate language learning. One of the key features of the app is the personalized learning experience. When the user first opens the app, they are prompted to select their preferred language and are given 3 options to choose from i.e. Characters, Words and Sentences.

The learning plan includes a variety of learning materials such as basic characters, vocabulary lists, and interactive exercises. The app is structured in such a way that the user first learns the basic characters of the language, then moves on to learning words, and then learns about sentences. There are various types of lessons included such as Intro chars, identifying letters from sounds, identifying sounds from words, choosing the correct word, choosing the correct sound, and so on. The same type of lessons are present for characters and words. For sentences, join the jumbled sentences, identify the sentence from audio, and identify the correct audio of the sentence. The grammar rules and vocabulary lists are presented in a structured and systematic way, making it easy for users to learn and retain new information. The interactive exercises are designed to be fun and engaging, with gamification elements such as streaks that motivate users to continue learning.

The application also includes advanced text-to-speech conversion features. This feature allows users to practice speaking and listening skills in a realistic and immersive way. The text-to-speech technology can convert text into natural-sounding speech, making it easier for users to practice listening skills.

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The Indian Language Teacher application has been developed to address language learners' challenges. One of the biggest challenges is the lack of resources and time. Traditional language learning methods often require learners to attend classes or hire a private tutor, which can be expensive and time-consuming. This application offers a more convenient and cost-effective way to learn a new language.

Users can learn at their own pace and on their schedule, without the need for a classroom or tutor.

Another challenge that language learners face is the lack of motivation. Learning a new language can be a daunting task, and it's easy to get discouraged along the way. The application addresses this challenge by incorporating gamification elements that motivate and engage users.

In conclusion, the Indian Language Teacher application is an innovative and effective tool for language learners. It offers a personalized and engaging learning experience, with advanced features such as text-to-speech conversion. The app is designed to be user-friendly and intuitive, with gamification elements that motivate and engage users. The application has the potential to revolutionize the way we learn languages and make language learning more accessible and enjoyable for everyone.

II. LITERATURE REVIEW

Text-to-Speech (TTS) technology is widely used in modern-day applications for natural language processing. The Indian Language Teacher application leverages TTS to provide a more engaging and immersive learning experience for users. TTS technology allows the application to convert text-based content into speech, making it easier for users to understand and learn new words and phrases. By incorporating TTS, the application enables users to listen to native speakers pronounce words and phrases, helping them improve their pronunciation and accent.

This research article [1] provides an overview of the use of mobile devices in language learning, including the advantages and challenges. It discusses the importance of incorporating mobile-assisted language learning (MALL) into language education and the various types of MALL applications that can be used to enhance language learning.

This article [2] examines the use of technology in language learning and teaching, including the effectiveness of technology-enhanced language learning (TELL) tools. It also provides an overview of the different types of TELL tools available and their impact on language learning outcomes.

This study [3] investigates the use of mobile devices for language learning among Chinese university students. It examines the students' attitudes towards using mobile devices for language learning and the impact of mobile learning on their language proficiency and motivation.

This research article [4] provides an overview of the recent applications of emerging technologies in mobile-assisted language learning. It discusses the potential of emerging technologies such as augmented reality, virtual reality, and gamification to enhance language learning outcomes.

This literature review [5] examines the use of gamification in language learning. It discusses the benefits of using gamification to enhance language learning and the different types of gamification techniques that can be used in language learning.

This research article [6] presents an interactive and adaptive educational application designed to help learners learn the Hindi alphabet. The application utilizes gamification techniques and personalized learning paths to make learning the Hindi alphabet engaging and effective. The authors conducted a usability study and found that the application was well-received by learners and had positive effects on their learning outcomes.

This literature review [7] provides an overview of recent mobile-assisted language learning (MALL) applications. The authors identify several trends in MALL application design, including the use of gamification, social features, and personalized learning paths. The review highlights the potential benefits of MALL applications for language learning and suggests directions for future research.

This research article [8] explores the use of mobile learning to enhance second language acquisition. The authors conducted a meta-analysis of studies on mobile-assisted language learning and found that mobile learning had a positive effect on learners' language proficiency. The authors also discuss the potential benefits of mobile learning, including increased motivation and engagement.

This research paper [9] presents the development of a mobile-based language learning application for Indian languages. The study focuses on the design and development of the application and discusses its potential for language learning in India.

This study [10] investigates the effectiveness of mobile language learning for English language learning among rural secondary school students in India. The study found that mobile language learning can be an effective approach for language learning in rural areas and that mobile phones can be used to provide access to quality language learning resources.

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III. METHODOLOGY

The creation of the app and making it unique among others is indeed not an easy task. It's not only about selecting the perfect algorithm, rather it's about making the algorithm work for you in the best way possible. Also, there are a few steps followed so that the application turns out to be error-free and unique among the others. The steps involved in teaching the language to the user include the collection of basic characters, words, sentences, audio generation, collection/creation of animations for buttons, and many more. Below is the Software Development Life Cycle (SDLC) of the application designed:

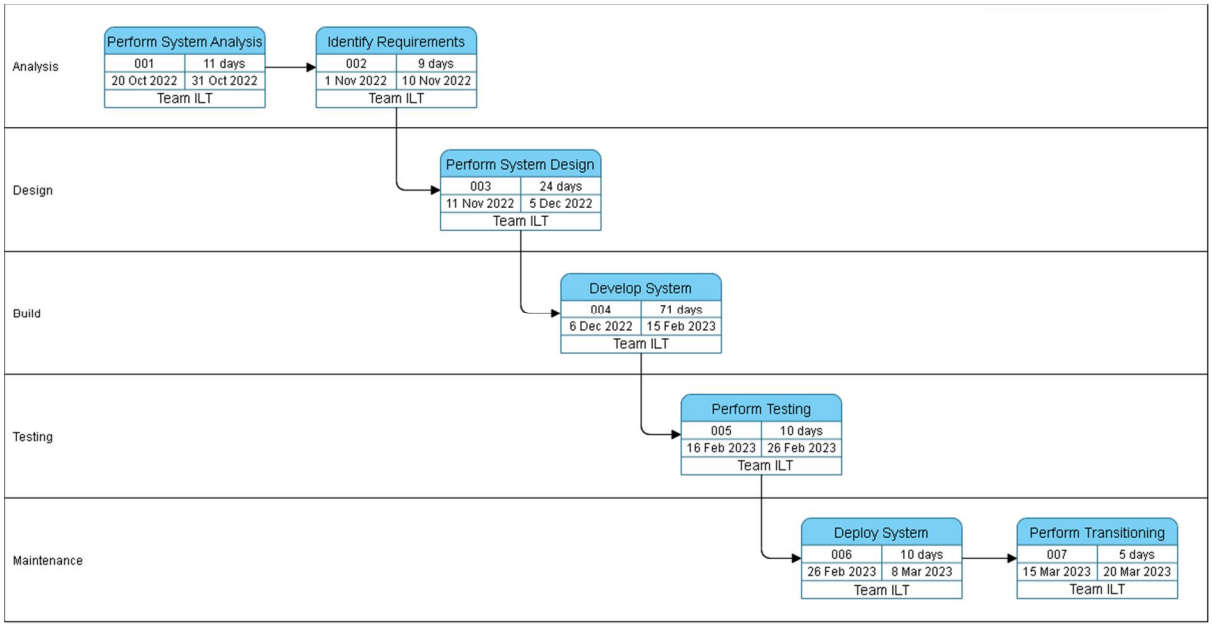


Figure 1. SDLC of IndoGuruji (Indian Language Teacher)

According to the above figure our SDLC is divided into 5 major phases Analysis, Design, Build, Testing and Maintenance. We begin by performing system analysis, and next we identify the requirements for developing the application. This took a total of 20 days. In the next phase i.e. the Design phase, we perform the System Design using Figma (a tool for UI Design). For designing the UI of the complete application, the team took a total of 24 days. In the next build phase, we coded the complete application from the scratch. For developing the system a total of 71 days were required. In the next 10 days, we performed testing of the application. The testing of the application included various approaches such as Black Box Testing, White Box Testing, Unit Testing, Integration Testing, GUI Testing, and Performance Testing. After making sure there aren't any major bugs and defects in the system, we deployed the application which took us a total of 10 days. This time was used to understand the various system requirements of the users who might use the application and based on that study we deployed the application. In the remaining 5 days of time, Transitioning was performed.

IV. MODULES

A. *User Module*

The user module described is a system designed for user authentication and login. It operates by accepting the user's phone number and using Firebase to generate an OTP for verifying the user's identity. Once the user has been authenticated, their phone number and authentication token are securely stored in a database.

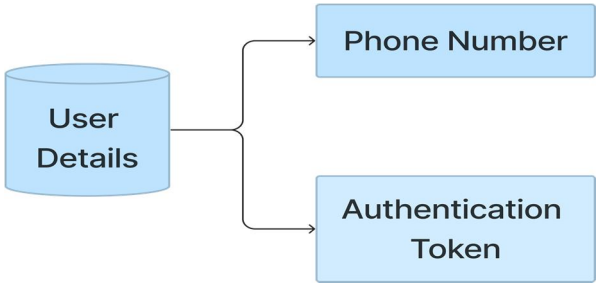


Figure 2. User Module

If the user's phone number already exists in the database, their progress is restored based on the authentication token. This means that the user can seamlessly resume their activity where they left off without having to log in again. If the user's phone number does not exist in the database, it is stored newly along with the authentication token.

The authentication token generated after successful authentication serves as a unique identifier for the user and is used to validate subsequent requests made by the user. This approach ensures that only authorized users can access sensitive information or perform important transactions.

Overall, this user module provides a robust and secure way to authenticate users and store their credentials for future use. It has a wide range of applications, including e-commerce, social networking, and banking. The use of Firebase for OTP generation adds an additional layer of security and reliability to the user authentication process. This system ensures that users can easily and securely access their accounts, making it an essential component of many modern applications.

B. Lessons Module

The lesson module is a system designed to help users improve their listening and language skills. It includes a variety of exercises that enable users to identify and distinguish between different sounds, words, and sentences in both English and a local language.

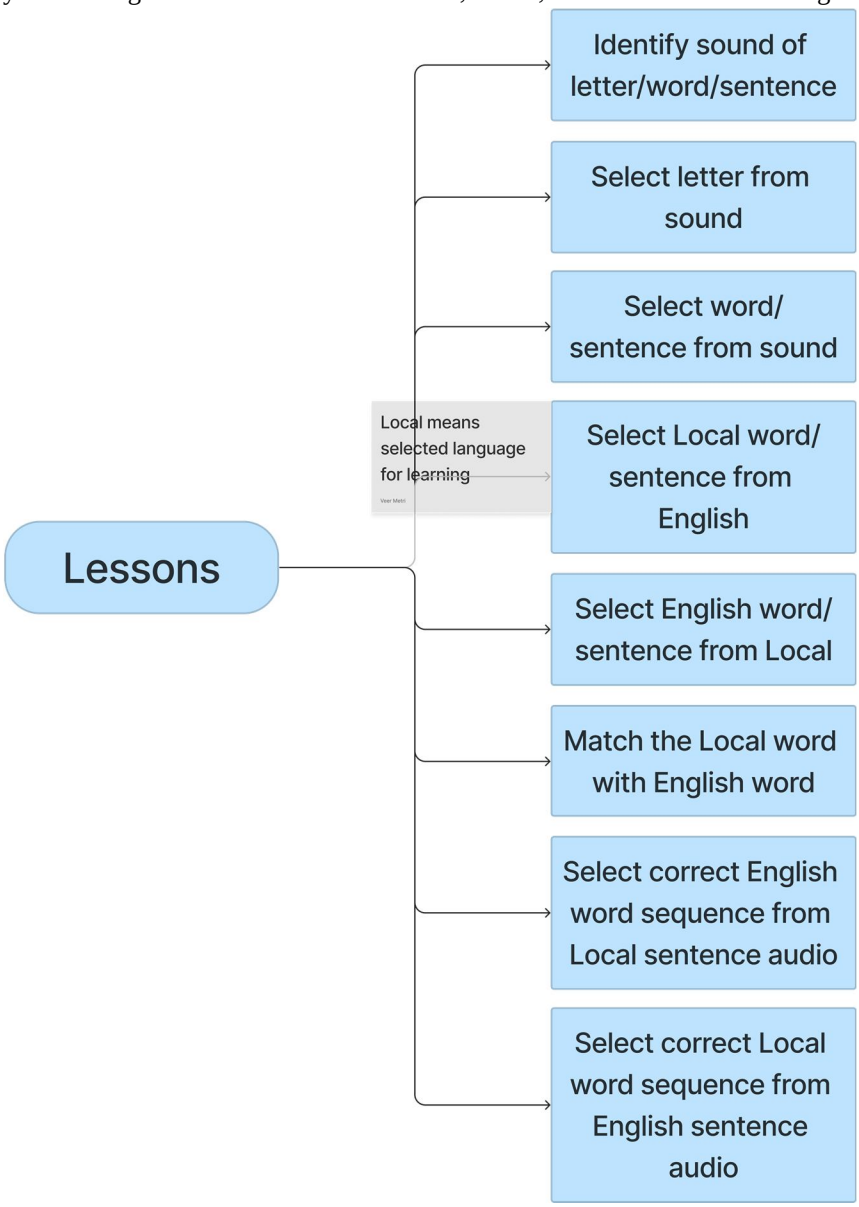


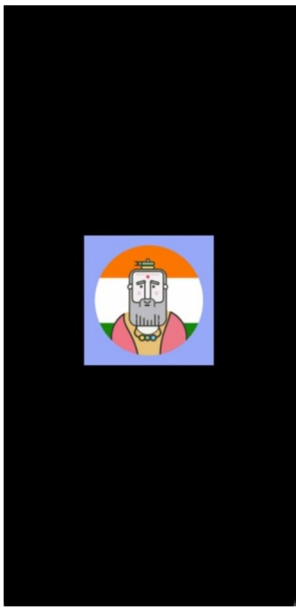
Figure 3. Lessons Module.

The exercises included in this lesson module are:

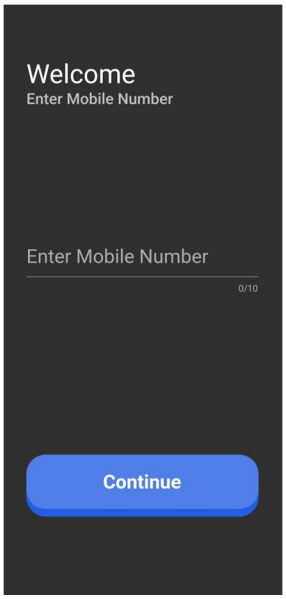
1) *Sound IDENTIFICATION:* Users are presented with a sound of a letter, word, or sentence, and they have to identify the correct sound from a set of options. This exercise helps users to develop their ability to recognize and distinguish between different sounds in the English language or a local language.
2) *Select Letter from Sound:* Users are presented with a sound and have to select the correct letter that corresponds to the sound. This exercise helps users to improve their phonetic awareness and ability to recognize sounds and letters.
3) *Select Word/Sentence from Sound:* Users are presented with a sound and have to select the correct word or sentence that corresponds to the sound. This exercise helps users to improve their listening skills and ability to understand spoken words and sentences.
4) *Select Local Word/Sentence from English:* Users are presented with an English word or sentence and have to select the correct local word or sentence that corresponds to it. This exercise helps users to improve their vocabulary and ability to translate between languages.
5) *Select English Word/Sentence from Local:* Users are presented with a local word or sentence and have to select the correct English word or sentence that corresponds to it. This exercise helps users to improve their language comprehension and translation skills.
6) *Match Local Word with English Word:* Users are presented with a local word and an English word, and they have to match them correctly. This exercise helps users to improve their language comprehension and translation skills.
7) *Select Correct English Word Sequence from Local Sentence Audio:* Users are presented with an audio clip of a local sentence and have to select the correct sequence of English words that correspond to it. This exercise helps users to improve their listening and comprehension skills for both English and local languages.
8) *Select Correct Local Word Sequence from English Sentence Audio:* Users are presented with an audio clip of an English sentence and have to select the correct sequence of local words that correspond to it. This exercise helps users to improve their ability to understand and translate the spoken language.

Overall, this lesson module offers a comprehensive and engaging way for users to improve their listening and language skills in both English and a local language. It can be a valuable tool for language learners or anyone looking to improve their communication abilities in a multilingual setting.

V. RESULTS

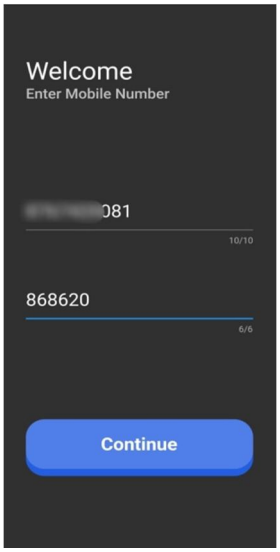


5.1 Startup Animation

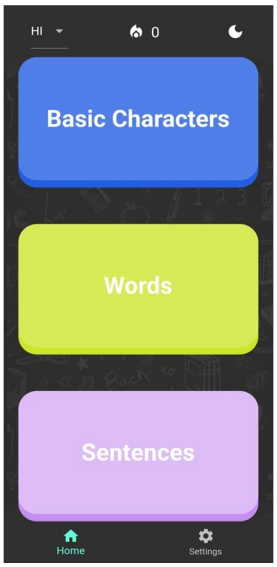


5.2 Welcome Screen

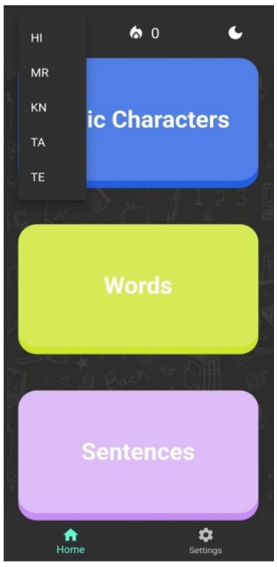
5.3 Human Verification



5.4 OTP Verification



5.5 Home Screen

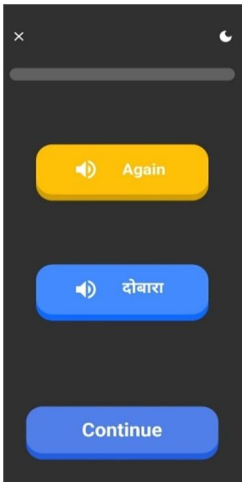


5.6 Language Selection

5.7 Intro Character

5.8 Select character from audio

5.9 Select audio from character



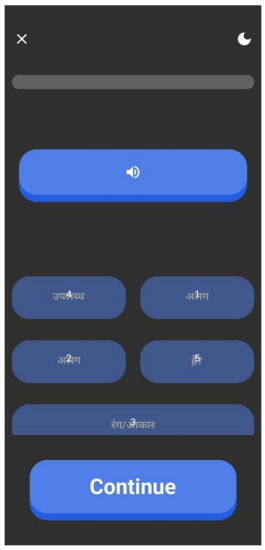
5.10 Intro Word

5.11 Select English word from Local word

5.12 Select the correct audio

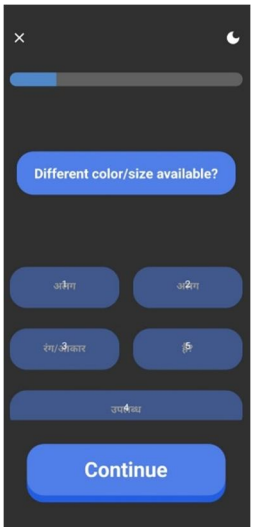
5.13 Select word from audio

5.14 Match the words



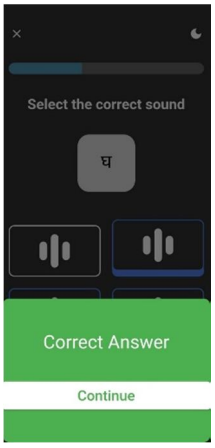
5.15 Arrange word sequence from audio (English -> Local)

5.16 Arrange word sequence from audio (Local -> English)



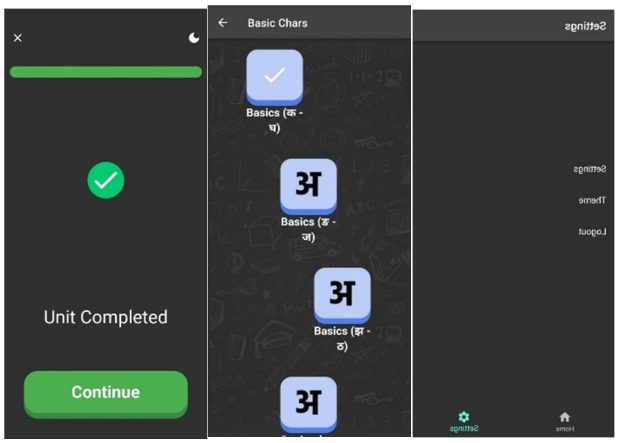
5.17 Arrange word sequence from English sentence

5.18 Arrange word sequence from Local Sentence



5.19 Correct Answer

5.20 Wrong Answer



5.21 Unit Completion 5.22 Units Screen 5.23 Settings

VI. CONCLUSION

In conclusion, the Indian Language Teacher application is a valuable tool for language learners, offering a comprehensive and interactive approach to learning Indian languages. The application is designed to be user-friendly and accessible, allowing learners to progress through different levels of learning at their own pace. The various modes of learning included in the application, such as identifying characters, words, and sentences, provide a well-rounded approach to language learning.

The use of modern technology, such as the Django Rest Framework and SQLite database, enhances the application's functionality and usability. The incorporation of text-to-speech technology enables learners to improve their pronunciation and listening skills. Additionally, the gamification elements, such as maintaining a streak, make the learning experience more engaging and motivating.

The literature review highlights the growing interest in mobile language learning applications and the potential benefits they offer. The research studies show that mobile language learning applications can be effective in improving language proficiency and increasing learner motivation. However, more research is needed to fully understand the impact of such applications on language learning outcomes.

Overall, the Indian Language Teacher application represents a valuable contribution to the field of mobile language learning. The application's comprehensive approach, user-friendly design, and incorporation of modern technology make it an effective tool for learners of Indian languages. With further development and refinement, the application has the potential to become a widely used and highly effective language-learning tool.

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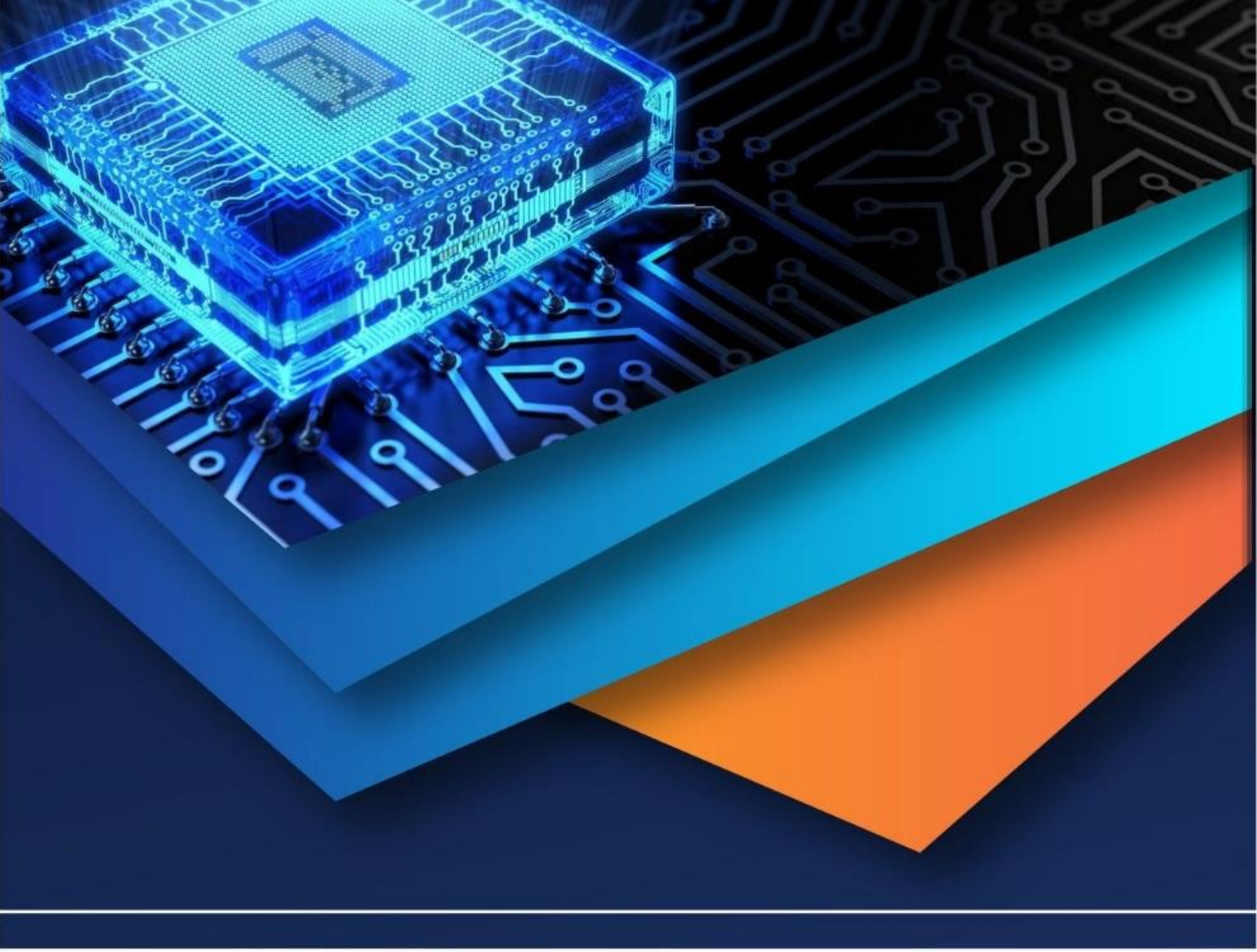

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